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ASSESSMENT OF THE STATUS OF LAND DEGRADATION IN ARID, SEMI-ARID AND DRY SUB-HUMID AREAS

Dryland degradation assessment and the millennium ecosystem assessment

Note by the secretariat

INTRODUCTION

1. The need to have a clear picture of the status of land degradation and its processes in affected countries has been repeated over the years by many concerned parties. To date, although a great deal of data on land resources are available, it has not been possible to get a clear picture of the status of land degradation at regional or national levels. The information needed is a basic and reliable estimate of the areas affected by the degradation of resources in drylands, using a well accepted standardized methodological framework and principles that can be used by actors involved in combating desertification at national, regional and international levels. There is also a need for the harmonization of existing data and information systems dealing with natural resources in drylands that are or will be produced in the context of numerous initiatives at the national level through national information systems and networks, at the regional level through such institutions as regional remote-sensing centres, and at the international level through such initiatives as the Millennium Ecosystem Assessment and early warning systems for food security, among others.

2. Thus existing data on the state of degradation of resources do not answer the needs of some key users. At the national level, information is scarce, unsystematic and not comparable, and does not provide reliable information on the level of the degradation of resources, nor, above all, on the causes and the trends of desertification. Existing documents cannot be used directly for planning purposes at national level, using the UNCCD national action programme (NAP) frameworks. At the international level, global data available still have insufficient resolution to be used in regional and national planning involving the regional action programmes (RAPs), subregional action programmes (SRAPs) and NAPs, and do not cover complex socio-economic and environmental interactions.

3. Methodologies on land degradation assessment and monitoring are not well developed. Particularly, methods to monitor the impact of land degradation on biodiversity, international waters and climate change are not well established. However, most methodologies in existence recommend the use of remote sensing and ground-truthing of vegetation cover, use of existing soil maps and surveys,

climate data and topographic maps for assessments of vulnerability to wind and water erosion. Others recommend the use of existing statistics on population and socio-economic variables as well as participatory field surveys for analysis of socio-economic driving forces, use of field indicators for calibration of broad assessments based on remote sensing and existing data, and causative models and Geographic Information Systems (GIS) processing for the integration of data and variables.

4. The scarcity and unreliability of needed scientific and technical information on land degradation therefore points to, *inter alia*, the following areas for targeted action: quantifying the extent and intensity of land and water degradation, including both spatial and temporal scales; inventorying degraded lands suitable for restoration to more productive uses; and analysing feedback linkages between biodiversity and land degradation and ecosystem resilience in drylands.

I. DRYLAND DEGRADATION ASSESSMENT

5. The necessity for having basic standardized information and methodological tools for land degradation assessment at various levels has been echoed by Parties and other interested actors. This includes an assessment of the impact of land degradation on sensitive ecosystems and international waters, such as shared river and lake basins and watersheds, and coastal ecosystems. The UNCCD secretariat is collaborating with the United Nations Environment Programme (UNEP) and the Food and Agriculture Organization of the United Nations (FAO) among other key players, with support from the Global Environment Facility (GEF) to facilitate a project on dryland land degradation assessment (LADA), with a view to assessing both the level and trends of degradation of natural resources, specifically water, vegetation and soil, as well as the main socio-economic and environmental driving factors that cause this degradation. This is a global initiative that will target areas affected by drought and desertification.

Objectives of the dryland degradation assessment

6. The main objective of the LADA is to provide basic standardized information and methodological tools for land degradation assessment at national, regional and global levels. An important component will be to assess the impact of land degradation on sensitive ecosystems and international waters, such as shared river basins and watersheds, and coastal ecosystems. LADA will also include a component on relationships between carbon sequestration in drylands and land degradation.

7. Analysis of the impact of land degradation and interlinkages with the GEF focal areas will be done by using impact indicators of levels of land degradation, such as ecosystem services, erosion rates and economic indicators. This will in part be achieved by coupling the LADA to global assessments such as the Millennium Ecosystem Assessment. The LADA, will also provide priorities for GEF interventions in the cross-cutting area of land degradation, particularly for sustainable use and conservation of dryland ecosystems and integrated land and water management at the watershed level.

Output of LADA

8. The main output of the LADA will be a medium scale, from 1:1 to 2 million according to parameters and areas, comprehensive geo-referenced database that can be used by national decision makers involved in RAP/SRAP/NAP implementation showing the different levels of degradation of resources including both actual degradation and risk of degradation of vegetation cover and vegetation types, natural as well as agricultural; soil erosion from water and wind, soil carbon stocks and salinization; status of water resources availability and quality; processes and dynamics in so-called hot spots of land degradation with

identification of human induced factors including direct, for example agricultural practices or land use; indirect, such as low awareness, social conflicts, inappropriate land and natural resources policies, and market distortions; climate induced factors such as precipitation trends, droughts and natural disasters; technical guidelines for countries for further use of the LADA database for, for example, implementation of early warning systems, assessment of the impact of land degradation on biodiversity, international waters and climate change.

9. Different types of output product will be designed according to the demands and needs of different end users and could include maps of impact indicators, reports, prediction models and a decision-support system. The primary users of the information to be generated through this initiative will be countries affected by drought and desertification; their national focal points and national coordinating bodies for the UNCCD; subregional organizations that are charged with the task of SRAP implementation; institutions that are implementing the regional action programmes for combating desertification; and civil society and the private sector. The secretariats of the environmental conventions will also make use of the information in identifying priority issues and interventions in dryland areas.

II. MILLENNIUM ECOSYSTEM ASSESSMENT: STRENGTHENING CAPACITY TO MANAGE ECOSYSTEMS SUSTAINABLY FOR HUMAN WELL-BEING

Rationale of the millennium ecosystem assessment

10. In light of growing human needs and the vast changes experienced by ecosystems, it is imperative that wise choices be made in their use and conservation. The challenge of effectively managing the ecosystems of the Earth and the consequences of failure will continue to increase during the 21st century. To meet this challenge there is need for a better understanding and awareness of the way different lifestyles and activities affect the ecosystem services on which people depend, and decision makers need much greater access to scientific knowledge in order to make well-informed decisions. In short, more information needs to be brought to bear on resource management decisions at all levels: global, national and local.

11. The concept of a global ecosystem assessment is to help decision makers to assess the impact of various actions on the national as well as the global ecosystem. The millennium ecosystem assessment (MA) is an outstanding example of the sort of international scientific and political cooperation that is needed to further the cause of sustainable development, and Parties should be called upon to render the necessary support and to become actively engaged in it.

12. The UNCCD secretariat was represented on the steering committee that was instrumental in shaping and developing the MA design, and is represented on both the Executive Committee and the Board of the MA.

Objectives of the millennium ecosystem assessment

13. The millennium ecosystem assessment is a four-year process designed to improve the management of the world's natural and managed ecosystems by helping to meet the needs of decision makers and the public for peer-reviewed, policy-relevant scientific information on the condition of ecosystems, consequences of ecosystem change and options for response. The MA will provide information and also build human and institutional capacity to provide information. More specifically, the MA will be responsible for the following:

(a) To significantly increase the understanding of the linkage between ecosystems and the goods and services they provide;

(b) To increase human capacity and the capacity of global, regional, national and local institutions to undertake integrated ecosystem assessments and act on their findings;

(c) To strengthen international environmental agreements and improve environment-related decisions of Governments by improving access to the best scientific information;

(d) To support 10 regional, national, and local integrated assessments that will directly contribute to planning and capacity-building needs;

(e) To enhance civil society efforts to promote sustainable development by enabling ready access to peer-reviewed data and information;

(f) To increase the incentives and information available to guide change in private sector action;

(g) To develop methodologies to undertake cross-sectoral assessments and to effectively integrate information across scales;

(h) To identify important areas of scientific uncertainty and data gaps that hinder decision-making and deserve greater research support.

14. The MA will provide the scientific underpinning to a wide range of national and international efforts to address environment and development challenges. These environmental challenges are interwoven, and thus an integrative assessment process is needed to highlight for decision makers the linkages between climate, desertification, biodiversity, freshwater, marine and forest issues.

15. The MA will be undertaken at multiple spatial scales. It consists of a global assessment as well as 10 assessments of conditions and changes in ecosystems in individual communities, nations and regions. Assessments at these subglobal scales are needed because ecosystems are highly differentiated in space and time and because sound management requires careful local planning and action. Local assessments alone are insufficient, however, because some processes are global and because local goods, services, matter, and energy are often transferred across regions. The local, national and regional assessments will be designed to foster and build capacity for widespread adoption of integrated assessment approaches in other regions and nations.

Target audience

16. A primary audience for the global findings of the MA will be the Parties to the ecosystem-related conventions, UNCCD, CBD, UNFCCC, RAMSAR, CMS. A Summary for policymakers will be prepared for these conventions, approved by the MA Board, and then submitted to the scientific bodies of those conventions. Parties to the conventions will then determine which findings will be formally accepted into the individual convention process, based on their specific information needs. Other important audiences include national governments, non-governmental organizations (NGOs), civil society, business, indigenous peoples, and the media. Representatives of the conventions and other audiences will determine the specific focus and products of the MA through their representation on the Board. An advisory group of some 80 individuals from 35 countries has been established and the MA will also establish links to the national focal points for the ecosystem-related conventions in all nations.

Outputs of the millennium ecosystem assessment

17. The Global Assessment and each of the 10 local, national and regional assessments will respond to requests from decision makers to provide information by:

(a) Assessing conditions, pressures, trends and changes in ecosystems and the current economic and public health consequences of those changes. For example, the MA might examine the question of whether there is evidence that the biological capability of agro-ecosystems to produce food is declining;

(b) Assessing the state of scientific knowledge. For example, the MA might examine the question of how well scientists can predict when threshold responses of ecosystems, that is, sudden and dramatic changes, might occur in response to species loss, increased nitrogen input or invasive species;

(c) Assessing the ecosystem and the impact of plausible future scenarios of change in driving forces, such as population, consumption, climate, technology and economic growth, on the economy and on public health. For example, the MA might examine the question of what the consequences would be for biodiversity conservation in forests and freshwater ecosystems and the availability of clean water under two different scenarios for increasing agricultural production in a particular region, one relying on expansion into forested areas, and one relying on intensification through fertilizers, irrigation and pesticides;

(d) Assessing the strengths and weaknesses of various policy, legislative, technological or other action that has been taken or proposed to improve the management of ecosystems.

18. Building human and institutional capacity. Specific capacity needs will be identified during the first year of the MA, but capacity-building is likely to take place through at least the following basic approaches:

(a) Increasing skills and expertise of the individuals and institutions involved in all scales of the MA;

(b) Increasing access to technical tools and scientific models for undertaking integrated assessments by all interested experts and institutions;

(c) Increasing access to data and indicators for use in local and national assessments;

(d) Developing and disseminating new approaches for linking local-level expertise and assessments with national, regional, and global expertise and assessments;

(e) Increasing experience with the design of assessments that fully involve stakeholders at the local, national, and regional levels;

(f) Increasing international stature and access to international sources of support.

19. The findings of the global and subglobal assessments will be presented in technical reports, accompanied by summaries targeted at specific audiences. The reports and summaries will be widely disseminated in many languages. In addition to the printed products, the MA will reach a broad public audience through a dynamic outreach strategy involving workshops, briefings and extensive use of the Internet.

The assessment process

20. Technical experts. The MA will be carried out through expert working groups focused on design, conditions, scenarios, response options, subglobal assessments, and outreach. They will be designated as follows: Design Working Groups, which will enable the MA to develop an internally consistent set of methodologies for conducting the assessment at local, national, regional and global scales; Current Ecosystem Extent, Trends, Conditions and Value Working

Group, to provide baseline information on the geographic extent of different ecosystems, including terrestrial, freshwater and marine, and the patterns of use associated with them. It will present information on trends in ecosystem goods and services, their conditions and value, their contributions to human development, and the pressures affecting them; an Ecosystem Scenarios Working Group to present a range of plausible scenarios for how the quantity and quality of ecosystem goods and services may change in coming decades in different regions of the world and how this will affect human health and economic development. It will assess the trade-offs among various goods and services; Response Options Working Group, which will identify policy, institutional, legislative or technological changes that could improve the management of ecosystems, thereby increasing their contributions to developing and maintaining their long-term sustainability; Local, National and Regional Assessment Working Group which will involve a set of ten assessments at local, national and regional scales; each will examine conditions, scenarios, and response options; and an Outreach and Engagement Working Group, which will enable the MA to design and implement a process for engaging users in the MA and communicating the findings in ways that meets users' needs.

21. Each working group will be co-chaired by leading natural and social scientists from developed and developing countries. The working groups will be composed of a geographically balanced group of experts from universities, the private sector, government, and civil society. The working group co-chairs will constitute the Ecosystem Assessment Panel. The MA Board will select the working group chairs and will review the working group composition to ensure an appropriate regional, technical and gender balance.

22. Design and methods. In its first year, the MA will focus on the development of an internally consistent set of methodologies for conducting the assessment at local, national, regional, and global scales. The methodologies will define the information that will be produced, questions that will be answered, and capacity needs that will be filled, as well as the products and outreach strategy. The methodologies will identify both common design elements to be applied at all scales from local to global and features unique to different scales.

23. Peer review. All of the assessment findings will undergo extensive peer review. Reviewers from all countries will be nominated by scientists, governments, businesses and civil society. The review process will be developed and overseen by the MA Board and an independent review body. The review process will be tailored to the unique characteristics of the different scales of the assessment. For example, because the local assessments will rely heavily on unpublished local expertise and knowledge, the peer review process for local assessments will differ from that used for the global component.

24. Linkages with research and assessment activities. The MA will be closely coordinated with other global assessments, including the UNEP Global Environmental Outlook, the Global International Waters Assessment and the Intergovernmental Panel on Climate Change, among others. It will be designed to strengthen planned and ongoing assessment activities and sustainable development planning activities at regional and national levels. The MA will include new analyses, but it is not a research project. Instead, the MA is a mechanism to bring the findings of research and monitoring to bear on the needs of decision-makers. The MA will work closely with research programmes such as the International Geosphere Biosphere Programme and the International Human Dimensions Programme on Global Environmental Change, and with monitoring activities, including the Long-Term Ecological Research Network and the Global Observing System, among several others.

Institutional arrangements

25. At least six different institutions will provide core administrative, logistical and technical support to the MA process. These institutions will provide support as needed to the working groups that will undertake the assessment. The United Nations Environment Programme will handle the administration of the core financial support and employ the director, who will be co-located with the developing country co-chair. Individuals will be assigned to work on the MA through various support institutions forming a distributed secretariat.

Linkages of dryland degradation assessment and the millennium ecosystem assessment with the work of the CST

26. A number of agencies and Parties of the UNCCD have recently expressed the need for assessment of land degradation, with the aim of providing suitable information and tools for tackling the problems experienced in dryland areas. Indeed the Conference of the Parties, by decision 14/COP.3 on early warning systems, established an ad hoc panel and requested it, *inter alia*, to review and elaborate on technical topics emerging from national reports of Parties and regional forums on implementation of the Convention.

27. More specifically, the ad hoc Panel was requested to review and elaborate on the dissemination of information to end-users on the applications of early warning and desertification monitoring and assessment, and strengthening of appropriate response mechanisms, particularly in the national action programmes to combat desertification.

28. The COP, in recognition of this priority of the UNCCD, urged countries to start the implementation of information systems on desertification at all levels. This priority was also taken up by several organizations. Several national action programmes have already included proposals for the implementation of information infrastructure on desertification among their priority areas. The COP by decision 22/COP.1 and decision 11/COP.3 also urged the parties as well as international organizations to mobilize technical, scientific and financial support to initiate the testing of impact indicators to enable comparison of the status of desertification in national reporting.

29. Furthermore, the COP by decision 16/COP.3, designated the priority issue to be addressed in depth by the Committee on Science and Technology at its fourth session to be the application of traditional knowledge, benchmarks and indicators and early warning systems to the monitoring and assessment of sustainable soil and water management in dryland areas for effective implementation of the national action programmes. The information that these initiatives aim to generate would be useful in answering the needs pointed out by the COP, particularly for users in the NAP implementation framework.

30. The UNCCD Committee on Science and Technology may wish to provide the necessary guidance to these two initiatives, and in that regard advise the Conference of the Parties as appropriate. The CST may wish to propose and endorse areas and regions where in-depth studies/assessments should be conducted by both the LADA and the MA, particularly in areas affected by drought and desertification. Moreover the CST may wish to nominate scientists and technical experts interested in contributing to the assessments in their respective areas of expertise. The CST may also wish to request that the outcome of these initiatives be presented to it at an appropriate time.

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